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*Insuring the To-morrow of the  
American Chemical Industry*

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*Tested, proved perfect, and ready to be advertised:  
American chemical glass and stone ware*

*Insuring the To-morrow  
of the  
American Chemical  
Industry*

*New York  
The Literary Digest  
1919*

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I N 7

**THE** facts set forth in this book are from authentic sources. They are the proudest facts in chemical history. They warrant the enlistment of the American people as a unit to protect and to invest in the American chemical industry, during the coming readjustments in the world's trade.

The leaders of the American chemical industry will come out of the laboratory and out of the factory and talk to the thinking public in the magazines and newspapers of America.

9/27/91

Kelvin + Annes Rel 27 June 47 Weiss



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# I

## *Introduction*

**B**EFORE the war the entire civilized world knew that Germany was the one place for dyes, chemicals, and chemical stone and earthenware. The knowledge that Germany was supreme in the chemical field was not made known in six months or a year. It was the culmination of years of effort on the part of the great German chemical houses.

In the first place the German chemical industry sold itself to its own people. We doubt if before the war there was a German subject of average intelligence who did not know that Germany was synonymous with chemicals and dyes.

The large financial institutions came to the aid of the manufacturers, lending them sufficient capital to permit of German dyes and chemicals being produced in immense quantities and being sold in all parts of the world at lower prices than any foreign made chemicals. The Imperial German Government saw the tremendous value of a world monopoly in dyes, potash, medicinal chemicals, etc., and immediately got behind the movement.

In 1914 America was cut off from German dyes and chemicals. What the American chemical in-

dustry has done to make America and the rest of the world independent of Germany for dyes and chemicals is a matter of history, and is treated briefly in this book.

The steps the American chemical manufacturers take now will largely decide the future of this new American industry.

American boots and shoes, American automobiles, American rubber goods, American electrical equipment, are known all over the world as being the best that can be made. This has largely been made possible because of the aggressive advertising policies of the manufacturers.

First, these American industries sold the great American public on the idea that their products were the best. They did not merely confine their efforts to their particular field—they advertised in national publications telling their message:

To the executives of the firms they wanted to reach,

To employees of those firms,

To the large financial interests of the country,

To the Government officials at Washington,

To their own organizations,

To the thinking public of the entire country.

This good will which they have built up has accomplished many things.

It has forestalled the importation to any appreciable degree of foreign made products because the American people believe that no foreign products are as good.

It has imbued the American public with the quality of these products so that when they are in foreign countries they talk the American goods they know about. And the American people are the greatest tourists in the world.

Just as these other industries have advertised, not only to their immediate market but to the entire country, the new American chemical industry should advertise, must advertise, if it is to take advantage of its wonderful opportunity.

## II

### *Something to Talk About*

THE American chemist is notoriously silent; so is the American chemical industry, and yet these two have more than most people or industries to talk about.

A few figures and facts show how the American chemical industry handled a crisis in history.

In 1914 the value of American explosives was \$6,272,000. In 1918, it is \$400,000,000.

To make this industry grow to its present proportions, to protect the American soldiers in the field, innumerable chemicals had to be produced in record breaking quantity.

Before the war there was practically no phenol industry. For war purposes, in 1917, 15 plants produced \$23,715,805 worth of phenol, most of it synthetically and from American made benzol.

Sulphuric acid production doubled, the mining engineer aiding the chemical industry by increasing sulphur and pyrites in proportion to the huge demand.

A new synthetic ammonia industry, a new nitric acid industry, appeared in the twinkling of an eye.

Five million dollars worth of monochlorbenzol was produced in 1917, by eight American firms. This chemical is purely a product of wartime and



never was manufactured in the United States in bulk before.

Mercury for the manufacture of fulminates increased in production 100%.

From unusual sources benzol and toluol, produced in negligible amount before the war, began to appear in large quantities for use in munition making.

Acetone, necessary to the navies of the world for making the explosive cordite, and essential to the air forces for use in airplane dopes, appeared from four unique processes developed since the war. Such quantities of acetone as are now in use have never been known before.

Poison gases were a brand new problem. How to produce phosgene and mustard gas with which to talk German to Germans, involved difficulty and danger. The process of manufacture and the figures are necessarily secrets.

Phosphorus was wanted for incendiary bombs, barium and strontium nitrates for rockets.

Of each and every one of these chemicals the nation stood in need. In record time, the chemical industry produced them.

There were many complications in production, impossible to foresee. These have been successfully met and their mastery means much to the chemical industry of the future.

In working out reactions with unskilled labors in factories running at full speed in order to maintain the upkeep of supplies of munitions, the

first years of munition making were disastrous. The cases of poisoning in twenty eight industrial plants in 1916 came to 2,507. The chemical industry was called to time by industrial investigators, and showed great ingenuity in revising its processes.

Now that the war is won, the gas masks which saved our soldiers in France may save from industrial poisoning all workers in dangerous chemicals.

All of these things are worth talking about, now. But there is one fact more. Chemicals produced for munition making need markets now.

Articles of commercial value can be made, are being made, from most of them.

The dynamite that destroyed a German trench can clear an American farm.

The phenol used for making picric acid will soon be used in dyes, in photographic developers, in medicinals, flavors, and perfume materials, in plastic insulating materials, substitutes for shellac, and other natural gums and resins, etc.

Benzol and toluol used for explosives will make dyes, and intermediates from which dyes, medicinals, and other compounds of great value and in great numbers will be made in peace times. The remaining benzol and toluol will be used for motor fuel.

Monochlorbenzol can be used for making very fast dyes, valuable for depth of color and cheapness.



*A use for American explosives far too little known*



Mercury will return to medicinals and many other peace time uses.

Acetone will make plain varnish.

Nitric and sulphuric acid, respectively, will now find many peace time uses, especially in the chemical industry of which they form a most important part.

For the sake of adjusting the market for these now, manufacturers of explosives are already advertising. There is a place in the pages of non-technical periodicals for every subsidiary industry.

The day will come soon, when, beside the magneto, and the motor truck, "Sulphuric Acid, C.P." and many another product of the American chemical industry will adorn the advertising section of modern magazines, to the enlightenment of the investor of capital, of the producer whose efficiency it will increase, of the workman whose advantage it affects, and to the best interest of the American chemical industry.



### III

#### *American Dyes*

**I**F the chemicals used in explosives during the war are something to talk about, so are American dyes.

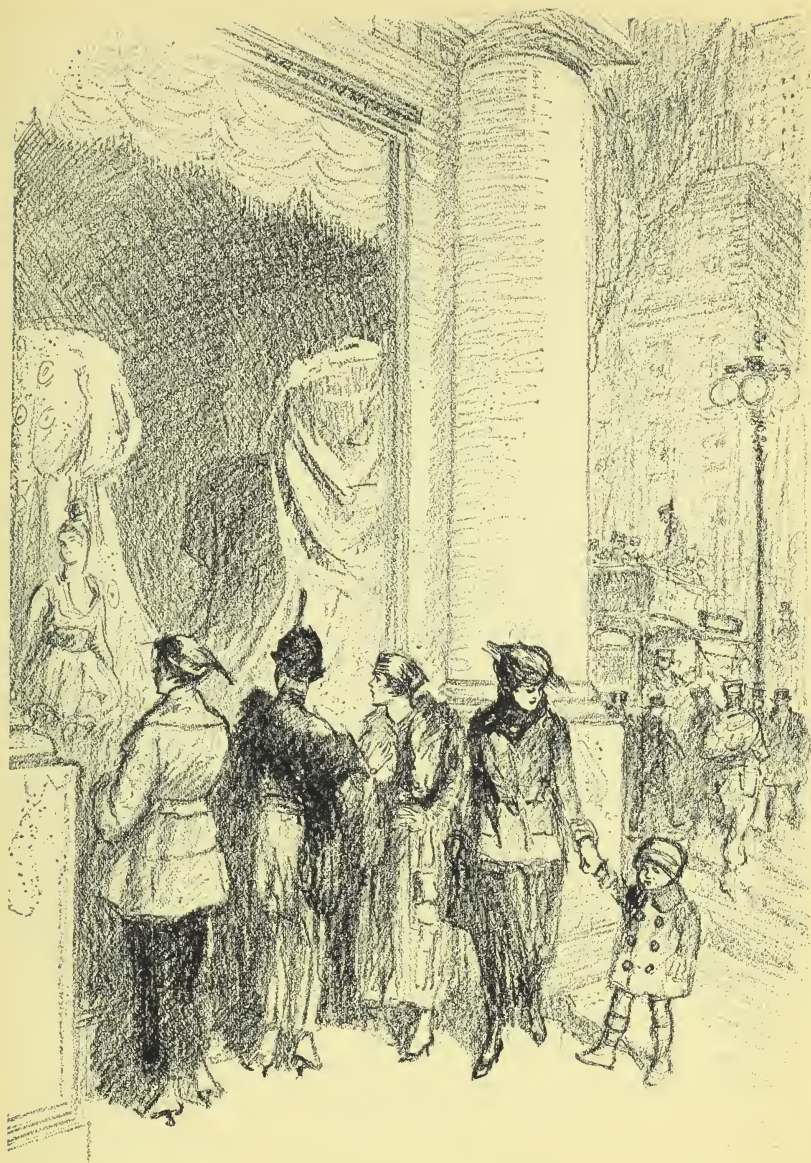
In 1914 there were five manufacturers of dye stuffs in America. Today there are 81 established manufacturers of coal tar dyes, and 118 firms manufacturing intermediates.

Dye imports from Germany in 1914 were worth \$5,965,537. In 1918 America imported from Switzerland and the United Kingdom, \$97,828 worth of coal tar dyes, the only considerable import.

The American dye industry in 1914 made a very small fraction of American dye needs with foreign materials, and had neither crudes nor intermediates to speak of. Today the American dye industry is meeting practically all American requirements, and now that all the necessary chemicals are freed from use in explosives—toluol being a necessary adjunct to the dye industry—all the requirements will be made.

The American dye industry in 1918 represents an investment of \$250,000,000.

Not only is this new industry supplying America, but it is already exporting dye stuffs to Germany's old clients.



*Are these women doubting? Or do they know that  
fast American dyes are here?*





To Spain, France, Mexico, Argentine, Brazil and British India, America exported in 1918 \$8,227,576 worth of dye stuffs. This is more than the pre-war imports in value, but not in tonnage, nor in the variety of dyes.

The American dye industry is taking its own time in producing variety, having satisfactorily met all principal color needs. Fast acid dyes for wool, and vat dyes for cotton, were the first ones we had to make, and they have been easily made. The experimental stages are entirely over, when careless and ignorant use of the dyes by some American consumers started the rumor that American dyes were unreliable.

German propaganda against American dyes was particularly vicious. Given adequate publicity, American dyes will become a household word for excellence and reliability.

Germany did more than discredit American dyes by spreading rumors. A syndicate of seven powerful German firms now exists for the express purpose of underselling American dyes.

American textiles, American leather, American paper industries, are satisfied with American dyes. German dyes must find a market elsewhere.

With the coming readjustments in trade, American dyes should be heralded all over the world as should American made medicinals and American made perfumery materials, also products of coal tar.

## IV

### *Coaxing Nitrates Out of the Air*

**T**HE American chemical industry is solving the problem of nitrates as brilliantly as the problem of explosives and dyes.

America imported normally more than 500,000 tons of sodium nitrate from Chili. Since the war the need for nitrates has become so urgent that in addition to this import from Chili, which could not be sufficiently increased due to transportation difficulties, America is creating a tremendous domestic source for nitrate.

The Air Nitrates Corporation, appointed by the Government to build and operate a plant at Muscle Shoals, Florence, Alabama, at a cost exceeding \$50,000,000, will produce, in 1919, 110,000 tons of nitrates from the air.

In 1919, America will transform sufficient nitrogen to equal 509,000 tons of nitrate, which is 300% more than that produced before the war, and 50,000 tons of which will be made by the so-called "arc process," in which the oxygen and nitrogen of the atmosphere are brought into chemical combination directly by the intense heat of the electric arc.

This new process, a triumph of the chemical industry, has developed remarkably since 1914.

Air, water and electric power are the only essentials beside ordinary labor.

From electrochemical plants, plus coke oven plants, nitric acid and ammonium nitrate will be available in quantities and at prices hitherto unknown.

Nitric acid has been in as great demand as nitrates. The explosive makers used it in such enormous quantities that the production in America had increased 900% by the end of the war.

It has been produced from the air, from nitrate of soda plants, from ammonia oxidation plants, with such success that now that the war is won the market must be widened beyond belief.

Over 80% of the present nitric acid producing capacity now awaits the decision of America to use it, or lose it.

American nitrates, and nitric acid for peace time uses, should be blazoned upon page after page of representative American magazines.

*Potash: A Challenge to Capital*

THE farmer who buys American nitrates will buy American potash, too, and the American chemical industry will supply him.

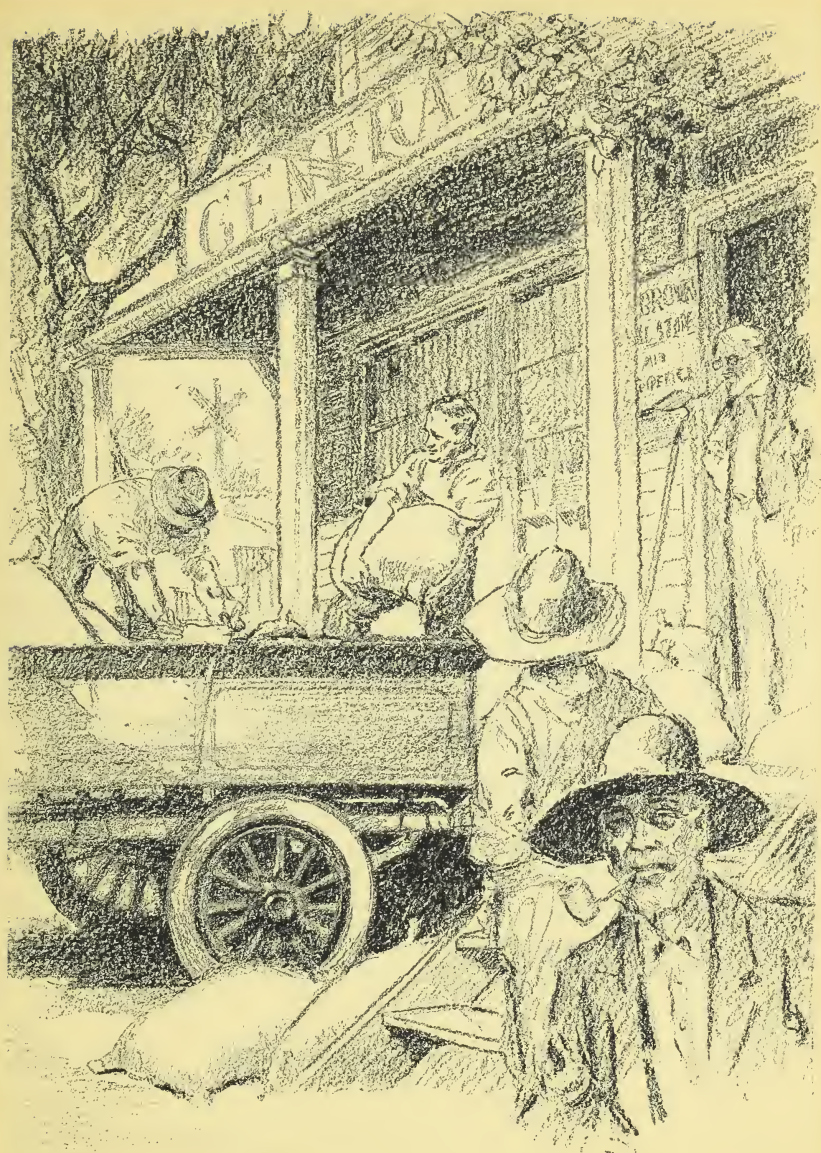
America needs, for fertilizer, from 300,000 to 600,000 tons of potash a year, if she is to raise the enormous crops on which the continuance of her agricultural supremacy depends.

Almost the entire amount was imported from Germany before the war. The mines in Stassfurt contain a remarkable natural supply. Germany prided herself on being potash dictator of the world. She still hopes to gain access to the family of nations with potash to assist her.

The effort of the chemical industry has raised potash production from practically nothing to 60,000 tons a year. The industry has, at the present moment, completed investigations which promise America the potash she needs.

Two of America's new processes make potash available, with little expense or labor. Potash from blast furnace gases is produced by electrical precipitation in marketable form with but little extra labor and at the same time making the furnace more efficient. Potash from Portland cement occurs in the cement dust. These two processes alone





*Ready to coöperate, if American potash is advertised*



should make America independent of German potash.

The American chemical industry expects to obtain in 1919, 10,000 tons from Portland cement, and 150,000 tons from blast furnaces.

All of the natural sources of potash need tremendous capital investment. They must be developed, one and all, to the maximum.

Potash is recovered from kelp along the Pacific Coast. Alunite, found in Utah, yields potash of a high degree of purity. Potash in small quantities is found in iron ores, in "vinasse," a by-product of sugar making, and in felspar.

Searles Lake, in California, is an example of an alkaline deposit of many salts, including potash, in combination. A plant built there makes these salts commercially useful.

Perhaps no other chemical industry challenges the attention of capital as does potash.

America, with all its tremendous resources, should not rely on Germany for anything.

The price of domestic potash is, as yet, high. Only capital investment in unlimited quantity, the enlisted interest of all America, and legislative protection, can bring down the price to compete with Germany when her industries are re-organized.

The place for publicity in this important duty of all America to its new potash industry cannot be over estimated. It has been suggested that an American Potash Alliance be formed to

insure concerted action in protecting the new industry. It would add effectiveness to such an alliance if an educational campaign of nationwide proportions heralded it in popular magazines.

Every American citizen should know now all there is to be known about American potash. When the facts are known, no other potash will be to Americans "just as good." The farmer will know what he wants when he asks at the country store for fertilizer.



## VI

### *Sulphuric Acid a Commercial Trail Blazer*

IT is said that a nation's industrial welfare can be measured by its production of sulphuric acid. If this is the case, America's present situation is full of promise.

Increasing the annual production of sulphuric acid from 4,000,000 short tons in 1914, to 7,000,000 tons in 1917, is the wonderful achievement of the chemical industry. The iron and steel industry, and the explosives makers would have been crippled without this production in the war emergency, and new plants have been erected at great expense.

But it will be hardly possible, all at once, to convert this tremendous quantity of sulphuric acid to commercial use within the country without extending the market.

Sulphuric acid, more than other chemicals, is fitted to be a trail blazer in America's after-the-war trade in chemicals and chemical products. The enormous war-time consumption at home must be transferred to new markets, or the value of this industry will be largely lost. The chemical and commercial value of sulphuric acid will start the new day for American chemicals in trade.

In the manufacture of fertilizers, in the refin-

ing of petroleum products, in the iron, steel, and coke industries, in the manufacture of nitrocellulose, nitroglycerin, celluloid, and in general metallurgical practice, this acid finds its most important uses—all of which are international in scope.

Because of this inevitably wide commercial use, sulphuric acid must be widely advertised. There is a place for this, as well as all American chemicals, in the advertising pages of non-technical magazines.

## VII

### *The Place for Acetone in the Commercial World*

ACETONE and acetic acid, before the war were manufactured in small, but apparently sufficient, quantities by the distillation of wood. War brought about too great a demand for production in pre-war quantities. An immediate increase in acetone, from the pre-war output of 8,000 tons a year, to 20,000 tons, was called for. The demand for acetic acid was in even greater proportion. The limited time allowed made the task of the chemist and chemical engineer more difficult.

The American chemical industry was equal to the emergency. New methods in which acetone is derived directly from the fermentation of starch or from calcium carbide were quickly and successfully adopted, although some of the reactions involved are exceedingly delicate.

The present production is up to war-time requirements. The explosive, cordite, in use by the Navy, depended on acetone for its manufacture. Airplanes were all varnished with a preparation depending for its manufacture on acetone as the solvent, and cellulose acetate, made from cotton and acetic acid as the body of the varnish.

The main source during the war of both acetone and acetic acid was alcohol obtained by the fermentation of grain and molasses.

The cessation of the war has released tremendous quantities of industrial alcohol, which will be materially added to by prohibition legislation.

New avenues of consumption must be provided considering the close connection between industrial alcohol and agriculture.

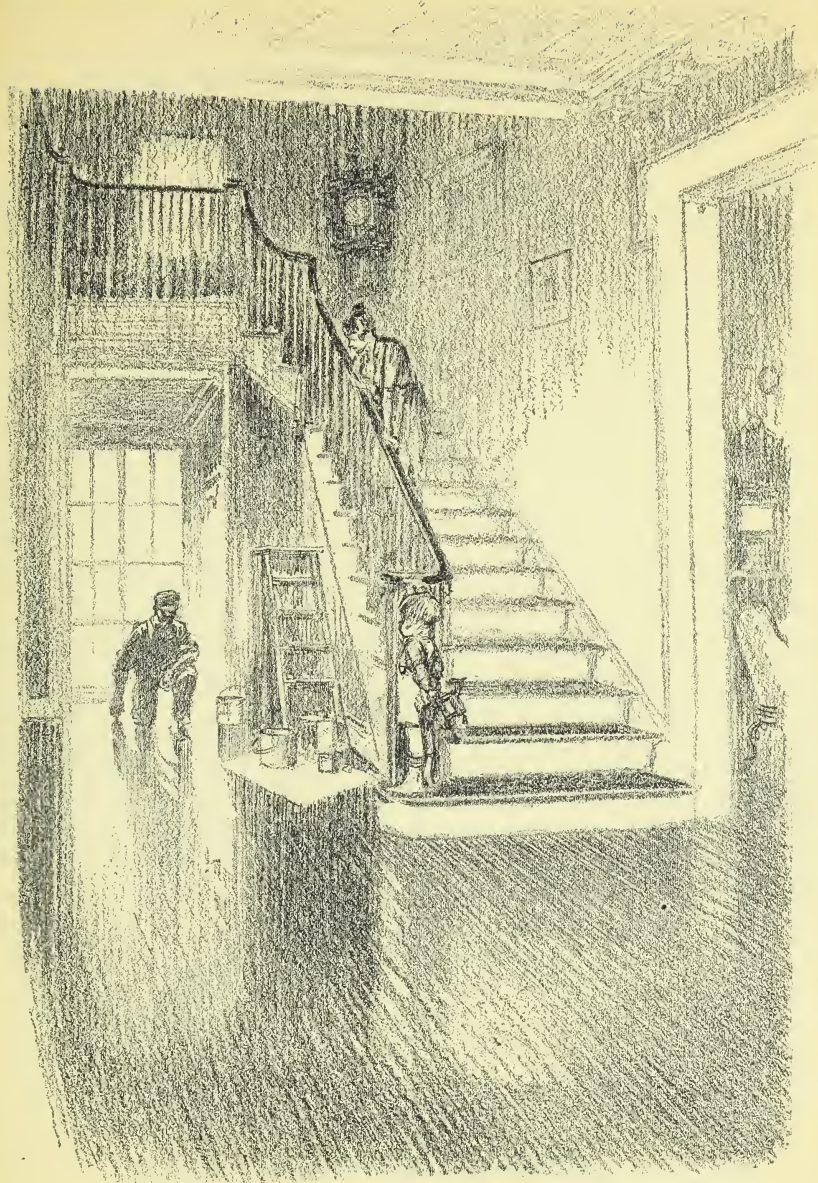
The use of alcohol as a motor fuel is by far the most promising. During the war Germany used alcohol almost exclusively for propelling purposes, having no gasoline of her own making. Alcohol also makes the best anti-freezing mixture for automobile radiators and the best anti-carbon liquids for motor engine cylinders.

Numberless other valuable products can be made from alcohol, such as ethers for flavoring purposes, solvents, and useful medicinals such as aldehyd, chloral hydrate, etc.

Acetone itself, now that peace is here, will become a solvent for all varnishes and lacquer. Acetic acid will now be used in the manufacture of crude rubber, lacquers, cellulose acetate, and dye stuffs.

The market for alcohol, acetic acid, acetone, and allied products, needs readjustment for present uses. The wood distillation industry, a source of these products, will be made to produce a long line of commercially valuable sub-





*Varnish—the ultimate use for the overproduction of acetone*



stances to take the place of the acetone and acetic acid, now more effectively derived from other sources.

The only way to place all these products on the market successfully, after the period of readjustment, is to advertise now.

## VIII

### *Setting the Motors of the World in Motion*

THE effect of the war on the oil industry was phenomenal. Motor trucks and airplanes had to have gasoline; guns had to have high grade lubricating oils; glycerine had to be found in sufficient quantity for explosives. The ordinary refining capacity was unable to produce gasoline in the required amount for American use, and for the use of the Allies. Fuel oil for the British and United States navies could not be supplied in sufficient quantity. Great Britain placed an export embargo on all glycerine producing oils in 1914.

The chemical industries supplied additions to straight refinery gasoline in blended casing-head gasoline and "cracked" gasoline. In 1917 70,000,000 barrels of gasoline were produced, doubling the production in 1914 which was 35,000,000 barrels. High grade lubricating oils were produced by the chemical industry, notably the recoil oil for use with heavy guns. Crude oil was successfully worked from the oil shales of the west. These oils and gasoline added to the toluol and benzol used for explosives are now set free, making America literally able to set the motors of the world in motion.



The quantity of fuel oil and other oil products affects a wide variety of industries.

All America must know the value and uses of these oils and oil products. Advertising will be essential to properly distribute this enormous output after the trade adjustments.

Advertisements of the new fuel oils, especially benzol and toluol, are as clearly indicated for the pages of popular American magazines as the advertisements already there of the motors these oils will affect.

## IX

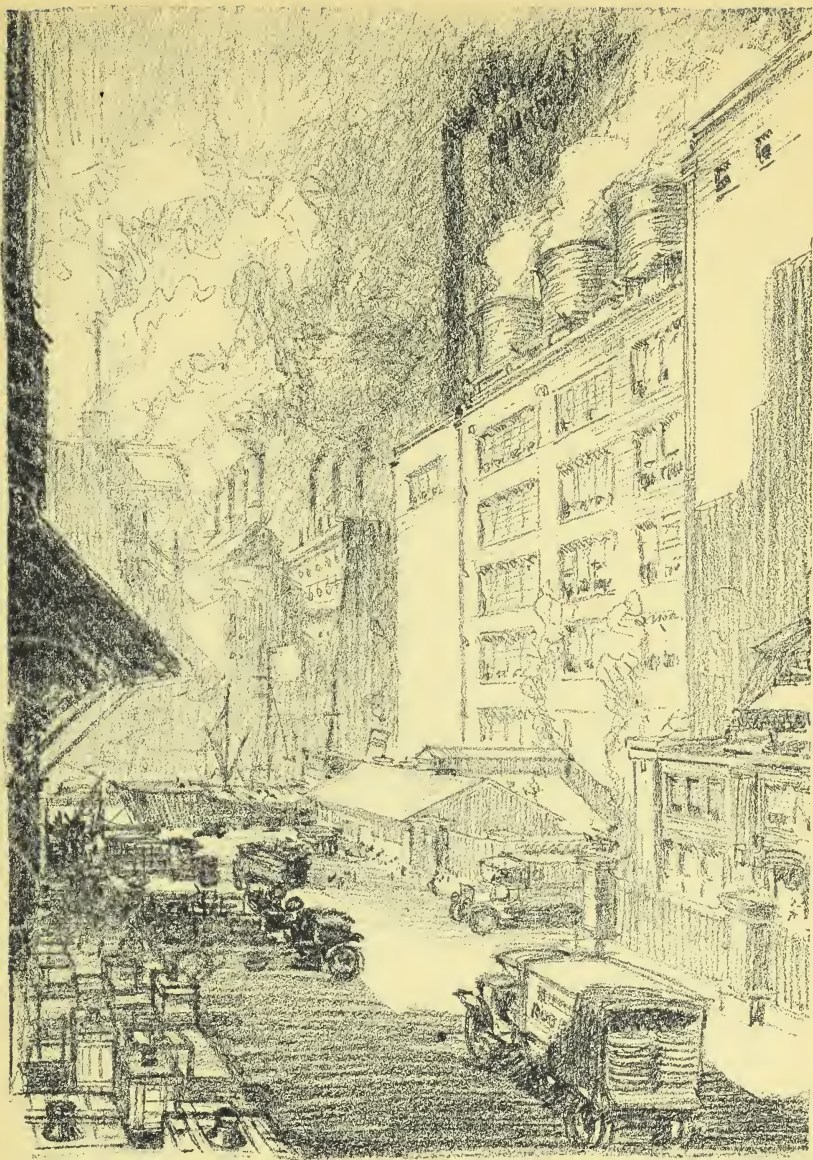
### *American Medicinal Chemicals*

THE problem of medicinal chemistry was complicated by the fact that formulae considered essential to American medicines were in many cases controlled by German chemists. These have been successfully replaced and the way to rational expansion of this very important branch of chemical industry is thus cleared.

American made synthetic medicinals for whatever purpose used—antipyretics, antiseptics, anaesthetics, etc., should be made thoroughly known in every American household, and throughout the world. American made photographic chemicals, closely allied to these, and at present produced in enormous quantities, must also be brought before the public directly by means of advertising.

Medicinals should be always plentiful and within the reach of all. The chemical industries that have expanded so remarkably since the war must make it impossible for Germany to find a loophole in medicinals through which to return to her pre-war dictatorship in this or other fields.

The American public should feel the ability of



*Advertising will assist in creating adequate markets for  
American sulphuric acid*



the American chemical industry to safeguard all commercial interests that chemistry can touch.

Medicinals from overseas are bound to appear as soon as internal Germany is organized to compete with those the chemical industry in America can produce. Never was there a more appropriate time for American medicinal chemicals to get their message before the American public.

## X

### *Chemical Adjuncts to the Rubber Industry*

VARIOUS unusual uses have appeared for the chemical industry in connection with rubber. Antimony, used in the manufacture of rubber, was formerly imported from England. American antimony is now to be had. Barytes for filler in the rubber industry was cut off by the war. Antimony sulphide was not to be had in this country. In addition to American antimony, American barytes has been discovered. Southern deposits have been opened and three grades of domestic barytes developed.

Red iron oxide is used with success, replacing mercury sulphide for coloring inner tubes. It is found to be less expensive and lighter.

The rubber industry has been making only war time necessities, and was assisted in this work by the American chemical industry. The development of these chemical adjuncts to the rubber industry is important, affecting, as it does, American chemical independence.



## XI

### *America's Answer to "Royal Berlin"*

SINCE the war, the development of glassware, stoneware, and ironware, for use in connection with the chemical industry, as well as for use in all manufacturing and in the home, is significant in completing American chemical independence. The industry of American ceramics had practically to be built from the ground up.

Before the war, America imported from Germany porcelain and glassware to be used in connection with all chemical processes requiring resistance to extreme temperature changes or to corrosive acids.

Necessity and the American chemical industry have proved that American clay and American manufacturers can fill American needs in this line. High fired porcelains, chemical glassware responding satisfactorily to the severest test, chemical stoneware that resists acid and heat, and that can be made into enormous vessels, chemical ironware of unusual quality, are all at the service of American chemists and manufacturers. The American Bureau of Standards has tested American chemical glassware, and finds it equal, if not superior, to Kavalier and Jena, the best hitherto imported from Europe.

From the glass baking dishes so successful in the home, to the stoneware crucibles of the laboratory, and the fire brick of furnaces, the list is complete. "Made in Germany" need adorn no more essential glassware, "Royal Berlin" as the hall mark of excellence in pottery can continue to be excellent—for Germans.

The success of these products so necessary to the chemical industry will prove a portent of success for still further developments.

## XII

### *Insuring the To-morrow of the American Chemical Industry*

CHEMISTRY was not made in Germany. Before the war, the average man thought it was. The German chemist was to him a little tin god.

Why?

When Germany's system of propaganda was spread broadcast, in every country in the world German dyes, German potash, German chemical glassware, stoneware, porcelain were everywhere said to be excellent, reliable, cheap.

German propaganda as we now know it may never appear again. Now that the war is over we must prepare to meet the industrial efforts of a German republic or a German confederation of states.

The twenty hideous gases loosed against the Allies by the chemical experts of Germany may for years have an adverse effect on the market for German chemicals. But a politically regenerated Germany may in time gradually remove sentimental barriers.

Today there is a just pride in the war achievements of all our industries.

But this is a mere beginning. For the American chemical industry a producing plant has been established—an industry has been founded. But the structure, at present, rests on war. The certainty that should be in every corner of the world, the conviction that should be in every American mind, regarding the ability and permanence, the range and versatility of the American chemical industry, does not exist today. The industry has naturally been so engrossed in preparing to meet war's enormous demands, that it has not been able to implant this conviction. But before the American chemical industry can take its place with the older American industries, it must accomplish five things.

First, it must sell the great American public on the fact that its dyes and chemicals are better than anything else in the world, so that the women will not hesitate when buying a brilliant-hued gown for fear the dye will not be "fast," nor the farmer when buying his potash and nitrates for fertilizer for fear they will not be as good as formerly.

Second, it must sell itself to the moneyed interests of the country to insure financial backing to expand and produce sufficient quantities at prices low enough to compete with all the world.

Third, it must find new markets for the chemicals now released and no longer needed for explosives.

Fourth, it must find profitable uses for the by-products of these chemicals which are now thrown away or not developed.

Fifth, it must develop new overseas markets to dispose of the over-production in certain lines.

*To tell the average man, to enlist the interest of capital, to protect new ventures, to widen the peacetime market, and to stifle German propaganda, once for all, the leaders of the American chemical industry MUST ADVERTISE.*











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